

REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in view of the following remarks and discussion.

Claims 1-11, 14-19, 22-25, 28, and 30 are pending. Claims 12, 13, 20, 21, 26, 27, and 29 were canceled previously. No claims are amended or newly added. No new matter is added.

In the outstanding Office Action, Claims 1-8, 10, 11, 14-17, 19, 23, 25, and 30 were rejected under 35 U.S.C. § 103(a) as obvious over Ma et al. (U.S. Patent No. 6,554,954, herein "Ma"). Claims 9 and 18 were rejected under 35 U.S.C. § 103(a) as obvious over Ma in view of Tong et al. (U.S. Patent Pub. 2004/0083975, herein "Tong"). Claims 22 and 24 were rejected under 35 U.S.C. § 103(a) as obvious over Ma in view of Hubacek (U.S. Patent No. 6,475,336).

At the outset, Applicants note with appreciation the courtesy of a personal interview granted by Primary Examiner Sylvia MacArthur to Applicants' representative on May 12, 2010. In combination with the Interview Summary provided by Primary Examiner MacArthur, the substance of the personal interview is substantially summarized below in accordance with MPEP § 713.04.

Regarding the rejection of Claims 1-8, 10, 11, 14-17, 19, 23, 25, and 30 as obvious over Ma, that rejection is respectfully traversed by the present response.

Independent Claim 1 recites:

A plasma processing apparatus comprising:
a plasma processing chamber;
a susceptor installed within the plasma processing chamber, the susceptor being made of an electrically conductive material;
an electrostatic chuck formed on the susceptor for mounting thereon a substrate to be processed;
a ring member directly disposed on the susceptor wherein an innermost circumference of the ring member surrounds a periphery of the substrate to be processed with a

gap between the innermost circumference of the ring member and the periphery of the substrate to be processed when the substrate to be processed is mounted on the electrostatic chuck, the ring member comprising an electrically conductive material; and

a lower ring body disposed directly below the periphery of the substrate to be processed and directly below at least a portion of the ring member wherein the lower ring body surrounds a periphery of the electrostatic chuck,

wherein when the substrate to be processed is mounted on the electrostatic chuck, a part of an upper surface of the lower ring body is disposed directly below the gap between the innermost circumference of the ring member and the periphery of the substrate to be processed,

wherein the susceptor includes a first surface on which the electrostatic chuck is directly mounted; a second surface on which the ring member is directly mounted; and a third surface on which the lower ring body is directly mounted, the third surface being disposed outside the first surface and inside the second surface, and

wherein a height of an upper surface of the electrostatic chuck is substantially equal to a height of the second surface, and a height of the upper surface of the lower ring body is lower than the height of the second surface.

(i) Thus, the susceptor includes a first surface on which the electrostatic chuck is directly mounted. The susceptor includes a second surface on which the ring member is directly mounted. The susceptor includes a third surface on which the lower ring body is directly mounted. Accordingly, both the ring member and the lower ring body are directly mounted on respective surfaces of the susceptor.

(ii) Additionally, the height of the upper surface of the electrostatic chuck is substantially equal to the height of the second surface. The height of the upper surface of the lower ring body is lower than the height of the second surface.

Regarding item (i), as discussed during the personal interview, Ma does not directly mount the ring member "outer collar" (50) on the susceptor (22). Nor does Ma directly mount the inner collar (52) directly on the susceptor (22). Rather, as discussed during the personal interview, the outer collar (50) and the inner collar (52) are mounted on, as shown in

Fig. 2, the conventional dielectric shield (40). In Fig. 4, the inner collar (52) is directly mounted on the dielectric shield (46). Similarly, in Fig. 5 of Ma, the inner collar (52) is mounted directly on the dielectric shield (46). The outstanding Office Action cites the inner collar (52) for the recited lower ring body of Claims 1 and 14.¹ Accordingly, as discussed during the personal interview, Ma fails to disclose or suggest mounting the inner collar (52), on which the outstanding Office Action relies for the lower ring body, **directly** on the susceptor (22). Therefore, Ma fails to teach all of the features recited in either of independent Claims 1 or 14.

Applicants' representative discussed the sections of Ma describing that the dielectric shield (40), the protective shield (50), and the inner collar (52) comprise a “process kit” and that these components are intended to be replaced periodically during the operation of the process chamber. For example, col. 5, lines 4-21 describe the above-noted “process kit” discussed during the personal interview. As Ma intends to periodically replace the dielectric shield (40), protective shield (50), and inner collar (52), a person of ordinary skill in the art would not have had any apparent reason to combine the dielectric shield (40) with the susceptor (22), and therefore, a person of ordinary skill in the art would not have had any apparent reason to modify the apparatus described in Ma to place the inner collar (52) directly on the susceptor as recited in independent Claims 1 and 14. Rather, modifying the dielectric shield (40) to be integral with the susceptor (22) would render Ma unsuitable for its intended purpose of allowing periodic replacement of the dielectric shield (40).

Regarding item (ii), as further discussed during the personal interview, Claim 1 recites that a height of the upper surface of the electrostatic chuck is substantially equal to the height of the second surface, and the height of the upper surface of the lower ring body is lower than the height of the second surface. As further discussed during the personal

¹ Outstanding Office Action, page 3.

interview, if the height of the upper surface of the lower ring body is lower than the height of the second surface, then the height of the upper surface of the lower ring body is lower than the height of the upper surface of the electrostatic chuck (because the height of the upper surface of the electrostatic chuck and the height of the second surface are substantially equal).

In contrast, as discussed during the personal interview, Ma does not disclose that a height of the upper surface of the inner collar (52), which is cited in the outstanding Office Action for the lower ring member, is lower than an upper surface of an electrostatic chuck. Rather, all of the embodiments depicting the inner collar (52) show the wafer (10) resting on the inner collar (52), and therefore, the upper surface of the inner collar (52) must be at the same height as the upper surface of the electrostatic chuck (26). Accordingly, Applicants respectfully submit that independent Claim 1, independent Claim 14 which recites substantially similar features to those discussed above regarding the upper surface of the lower ring member, and all of the claims depending from either of these claims, patentably distinguish over Ma for at least the reasons discussed above.

Tong and Hubacek fail to remedy the deficiencies discussed above regarding Ma. Rather, the outstanding Office Action relies on Tong for the specific materials of construction recited in Claims 9 and 18, and the outstanding Office Action relies on Hubacek for a feature of the ring member. However, Hubacek does not disclose a lower ring member as recited in independent Claims 1 and 14, much less the specific position of the upper surface of the lower ring member relative to the other surfaces as recited in independent Claims 1 and 14. Accordingly, Applicants respectfully submit that no proper combination of Ma, Tong, and Hubacek would include all of the features recited in either of independent Claims 1 or 14 or any of the claims depending therefrom.

During the personal interview, the Examiner noted that Japanese Patent Pub. 2002-246370 should be considered when filing a response. Applicants respectfully submit that

Japanese Patent Pub. 2002-246370 does not disclose a lower ring member with an upper surface lower than a height of the second electrode. Rather, as shown in Figs. 1 and 2 of JP 2002-246370, the heights of the separate components of the focus ring (12) are equal. In Fig. 3 of JP 2002-246370, the various components of the focus ring (22) are all disposed on a same surface of the susceptor (21). Accordingly, the embodiment described in Figs. 3 and 4 of JP 2002-246370 fails to disclose that the susceptor "includes a first surface on which the electrostatic chuck is directly mounted; a second surface on which the ring member is directly mounted; and a third surface on which the lower ring body is directly mounted, the third surface being disposed outside the first surface and inside the second surface, wherein a height of the upper surface of the electrostatic chuck is substantially equal to the height of the second surface." Rather, in all of the embodiments described in JP 2002-246370, the height of the electrostatic chuck is well above the height of the surface on which the focus ring is disposed. Thus, the focus ring (12) or (22) in JP 2002-246370 will typically be much thicker than the ring member recited in independent Claims 1 and 14 and will likely not produce the same effect on electric fields.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. A Notice of Allowance for Claims 1-11, 14-19, 22-25, 28, and 30 is earnestly solicited.

Should Primary Examiner MacArthur deem that any further action is necessary to place this application in even better form for allowance, Primary Examiner MacArthur is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

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